FD-1600 1-1/2 Hour Dynamic Rated Multi-Blade Fire Dampers

Product Bulletin

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Johnson Controls, Inc., provides a dynamic rated multi-blade fire damper for up to 2,000 feet per minute (fpm) and 4 in. Water Column (w.c.) static pressure in either direction.

- **Underwriters Laboratories Inc. ® (UL)** File No. R11172
- **New York City Board of Standards and Appeals (BSA)** Listing #176-82-SM
- **National Fire Protection Association (NFPA)** Standards 90A, 92A, 92B and 101

The FD-1600 Fire Dampers are listed under UL Standard 555, dated 2006, and carry the UL/cUL label.

FD-1600 1-1/2 hour fire-rated dampers are approved for mounting in walls constructed of masonry or gypsum wallboard (metal or wood studs) and mounting in cement floors or ceilings.

Figure 1: FD-1600 Fire Damper

Table 1: Features and Benefits

Features	Benefits
3-Year Warranty on Materials and Workmanship	Provides confidence of company standing behind product.
Fast Track Shipping - As Little as 10 Working Days after Order Entry	Provides faster response for projects at a minimal cost.
Closing Spring	Ensures closure during dynamic or static conditions and assists the latch with additional torque to keep blades closed.

Johnson Controls

Application

The FD-1600 Fire Damper meets specifications requiring one damper to provide a 1-1/2 hour fire rating. The FD-1600 Fire Damper is tested according to UL Standard 555 for dampers intended for use in Heating, Ventilating, and Air Conditioning (HVAC) duct systems passing through fire-resistant assemblies.

Install the FD-1600 Fire Damper according to the manufacturer's instructions. *NFPA-90A* and Sheet Metal and Air Conditioning Contractors' National Association *SMACNA Fire Damper Guide* provide additional reference guidelines.

The FD-1600 meets the requirements for the International Code Council (ICC) building code.

The standard FD-1600 Fire Damper includes a fusible link rated at 165°F (74°C). Fusible links rated at 212°F (100°C) and 285°F (141°C) are available.

FD-1600 dampers up to 72 in. wide x 96 in. high or 120 in. wide x 48 in. high meet rating requirements for mounting in walls, cement floors, or ceilings.

Sample Specification

Fire dampers meeting or exceeding the following specifications shall be furnished and installed at locations shown on plans or as described in schedules. Dampers shall meet the requirements of NFPA90A, 92A and 92B and shall be 1-1/2 hour fire-rated dampers for use where the duct passes through a fire-rated assembly of less than 3 hours in accordance with the latest version of UL555S.

As part of the UL qualification, fire dampers shall have demonstrated a capacity to close under HVAC system operating conditions, with pressures up to 4 inches Water Gauge (w.g.) in the closed position and 2,000 fpm air velocity in the open position.

Construction

Table 2: Materials

Frame	5 in. deep x 16-gauge galvanized steel
Blades	16-gauge galvanized steel, Triple V All blades are 6 in. nominal width and 8 in. maximum width.
Linkage	Concealed in the frame
Blade Pin	1/2-inch plated steel, hex
Bearings	Stainless steel
Side Seal	Flexible metal compression, stainless steel (optional)
Blade Seal	Inflatable silicone-coated fiberglass and galvanized steel, mechanically locked into blade edge (optional)
Sleeve[1]	20-gauge galvanized steel, 20 in. long (optional)

1. The optional sleeve is designed for use with standard breakaway connectors.

Mounting angles are provided with the damper as an option.

Labeling

All damper assemblies include an identification label, which provides the following information:

- damper model and size
- manufacturing date code (year/week)
- airflow direction

Other labels include:

- intended mounting position
- UL/cUL classification of damper
- temperature rating
- top of damper
- maximum rated airflow and static pressure

Operation

When the temperature in the system climbs above the fusible link temperature, the link melts, allowing the spring to close and lock the damper blades.

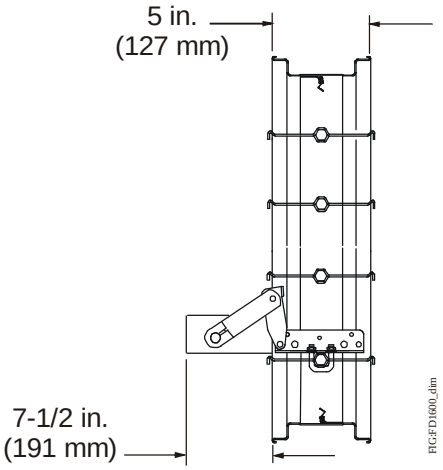

Figure 2: Mounting Dimensions

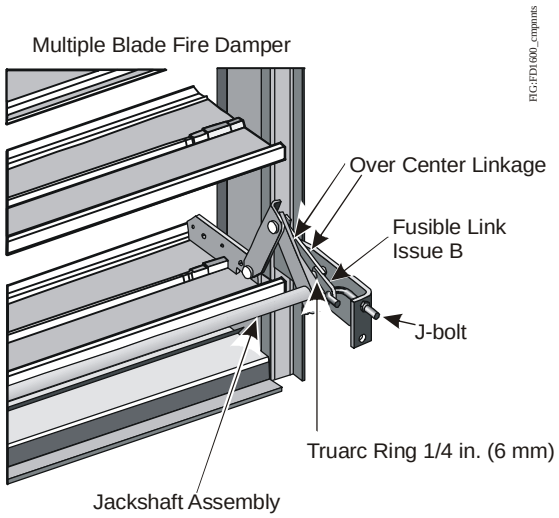

Figure 3: Damper Components

Ordering Information

FD-1600 dampers include standard 16-gauge galvanized triple-V steel blades and stainless steel bearings with the linkage concealed in the frame.

Example: FOWLN-020x020 is a fire damper with 16 gauge blades in opposed operation, with nominal dimensions of 20 in. wide x 20 in. high and 165°F fusible link.

Note: Not all option combinations are available.

FD-1600 size limits are a function of past UL tests. Actual damper size is 1/4 in. less than nominal.

All Johnson Controls® damper dimensions are from the outside edges of the damper frame.

Field-manufactured sleeves are to be made of 10- to 20-gauge galvanized steel. Proper sleeve length is determined by adding at least 2 in., but no more than 6 in., to each side of the wall or floor thickness.

Example: A 6 in. wall would require a 10 in. minimum or 18 in. maximum sleeve.

Perimeter mounting angles are to be provided by the contractor on each side of the wall and are to overlap the wall around the hole by a minimum of 1 inch. They shall also be sized in length to provide flush edges.

Fire Damper Selector

	Ordering Code Number	F	O	W		N	-	w	w	w	x	h	h	h		
Product Family	F = Fire															
Blade Operation	O = Opposed multi-blade															
Blade/Frame Type	W = 16 gauge galvanized triple-V/ 16 gauge galvanized															
Temperature	L = 165°F actuation M = 212°F actuation H = 285°F actuation															
Actuator Type	N = None															
Width Dimensions	010 to 072, 1-inch Increments															
Height Dimensions	004 to 096, 1-inch Increments															
Factory-installed Options	E = Exact Size F = Fast Angle (used with option L or V) L = Sleeve V = Transition Round or Oval															

Pressure Drop

To determine the pressure drop:

1. Select the damper free area factor based on the damper width and height from Table 4.
2. Solve the equation using the free area factor.

P = 2.75 {[(CFM ÷ Free Area) - Velocity] / 4005}^2

where

P = Pressure drop in inches w.g.

Velocity = Duct Velocity in feet per minute

CFM = Duct area (sq. ft.) x Velocity (fpm)

Table 3: Free Area

Height, in.	Width, in.							
	8	**12**	**16**	**20**	**24**	**28**	**32**	**36**
8	0.18	0.31	0.45	0.58	0.71	0.85	0.98	1.12
10	0.23	0.40	0.57	0.74	0.91	1.08	1.25	1.42
12	0.30	0.53	0.76	0.98	1.21	1.53	1.66	1.88
14	0.33	0.58	0.82	1.07	1.32	1.56	1.81	2.06
16	0.40	0.69	0.99	1.28	1.58	1.87	2.17	2.46
18	0.44	0.77	1.10	1.43	1.76	2.09	2.42	2.75
20	0.53	0.92	1.32	1.71	2.11	2.50	2.89	3.29
24	0.62	1.09	1.55	2.01	2.48	2.94	3.40	3.87
28	0.78	1.35	1.93	2.50	3.08	3.66	4.23	4.81
32	0.93	1.62	2.31	2.99	3.68	4.37	5.06	5.75
36	1.05	1.83	2.61	3.39	4.18	4.96	5.74	6.52
40	1.19	2.08	2.96	3.85	4.73	5.62	6.50	7.39
44	1.32	2.31	3.29	4.28	5.26	6.25	7.23	8.21
48	1.45	2.52	3.60	4.68	5.75	6.83	7.91	8.98

Repair Information

If the FD-1600 1-1/2 Hour Dynamic Rated Multi-Blade Fire Damper fails to operate within its specifications, replace the unit. For a replacement FD-1600 damper, contact the nearest Johnson Controls® representative.

Technical Specifications

FD-1600 1-1/2 Hour Dynamic Rated Multi-Blade Fire Dampers

Maximum Dynamic Rating	4 in. w.c. static pressure at 2,000 fpm in either direction of airflow
Temperature Rating	165°F (74°C), 212°F (100°C), or 285°F (141°C) fusible link
Agency Listings	UL/cUL
Replacement Parts	165°F, 212°F, 285°F fusible E Link

All Johnson Controls Dampers are built to order, just in time and cannot be returned due to customer ordering errors. All dampers are backed by a 3-year warranty that covers defects in materials or workmanship. Refer to terms and conditions of sale for specifics.

For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

Building Efficiency
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